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A MODEL TO REDUCE ANXIETY AND INCREASE UTILIZATION OF COMPUTERS IN THE CLASSROOM

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Introduction

Emphasis has recently been placed on the development of computer-related curriculum experiences. Only when teachers have learned to use the computer as a tool to enhance their own thinking can they encourage a similar ability in their students. Research has reflected consistently a positive correlation between teacher preparation, attitude, and utilization of technological tools (Rogers, 1978). As recently as 1982 students who were exiting into the profession perceived their microcomputer competencies and the importance of microcomputers as the lowest of 69 competencies related to technology (Ernest & Stanford, 1983). On the other hand, computers now exist in schools throughout the nation, and the number of machines increases each year. Yet data suggest that the computers need increased integration into classroom instruction. The needs assessment conducted by the University of Montevallo Inservice Center revealed computer literacy as the most critical need cited by teachers.

This study was designed to assess the knowledge and anxiety levels related to microcomputers of inservice teachers prior to exposure to a model of instruction and after completion of the instruction.

Model

Based on literature on classroom utilization of microcomputers, observation of successful programs, and needs assessments of elementary and secondary teachers, a

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model for the presentation of microcomputer experiences was developed for implementation at the University of Montevallo. The emphasis in the model is to allow teachers to return to their classrooms with the knowledge and confidence needed to utilize computers for instruction and management. Composed of four content components and a fifth optional collaborative component, the model is described below.

Computer Components

Through print, diagrams, and projected images, each component of a computer system is defined, explained, and handled by the participants in an initial session. Identification and relationships of the RAM, ROM, CPU, interface cards, disk drive, monitor, and printer are included. Construction and care of the diskettes allow more informed utilization.

Appropriate operation of each component is demonstrated and practiced, with an emphasis on explanation of the procedure. "Hands-on" experiences continues to be a major activity in the other three components.

Programming

The purpose of the programming component is not to create programmers in the computer science sense, but to create users who have a concept of how a computer is controlled. The languages of BASIC and Logo are taught due to their extensive school utilization and appropriateness

for beginners. Simple programs in BASIC are written emphasizing the interactive capacity of the computer. The planning and creation of low resolution graphics are included in the implementation of this component. The problem solving capabilities of Logo are illustrated by involving the teachers in turtle graphics activities similar to ones designed for classroom use.

Software

Evaluation of commercial software designed for instructional use is a cricial component in a model emphasizing utilization. Teachers are exposed to a multiplicity of programs in diverse subject matter areas from diverse vendors. Criteria such as appropriate utilization of the interactive aspect of the medium, accurate presentation of content, and viable instructional techniques are illustrated and explained. Software is reviewed from the perspective of prospective objectives and students. Where possible, validation exercises are encouraged. Techniques for curriculum integration are explored, based on individual scheduling and resource constraints.

Management

Three management functions are included to assist teachers in utilizing the advantages of computer technology in their classroom settings. The editing and formatting features of word processing can easily be applied to a

variety of tasks from test construction to letters to parents. With capabilities for electronic calculation, the spreadsheet is demonstrated for grade book as well as budgetary uses. Database management has applications for student recordkeeping and inventory purposes.

Collaborative Experience

During the 1985-1986 academic year, teachers had the opportunity to participate in a collaborative microcomputer experience formulated by the University of Montevallo and the Montevallo Elementary School (Shelby County). Teachers were observers/assistants as elementary students were instructed on curriculum related software and Logo in the College of Education Microcomputer Laboratory.

Methodology

Sample

The sample was composed of 50 inservice teachers (96%) and administrators (4%) from the University of Montevallo Inservice Center geographic area. The participants self-selected an elective coursework experience in microcomputer literacy. The sample represented elementary (78%) and secondary (22%) levels.

Instrumentation

Knowledge and anxiety levels and perceived values of microcomputers were elicited from participants. These aspects were ranked on a 5-point Likert type scale, with 1 as low and 5 as high, and neutral identified as 3. The

instruments were administered prior to and after the microcomputer experience.

Treatment

The treatment intervention consisted of a 5 week, 40 contact hour exposure to the model of microcomputer experiences. The participants were divided into 3 groups, composed of 25, 14, and 11 members. In most cases, two participants shared a computer. The majority of each session involved hands-on exercises. In addition, access to the computer was made available outside of session times. Each session was taught by a University of Montevallo faculty member, with additional lab assistance in some cases.

Data Analysis

For analysis purposes, rankings 1-2 were collapsed as one and assigned the rank of low, and 4-5 were collapsed as one and assigned the rank of high. The frequencies and percentages were calculated for each concept at the entry and exit levels. The projected utilization responses for each topic were tallied.

Results

Knowledge

The comparison of the results of the entry assessment and the post assessment are shown in Figure 1. Over 80% of the sample indicated an initial knowledge level of low with only 6% reporting a high knowledge level. Post assessment

rankings reveal 92% of the sample reported a high knowledge level, while none of the participants indicated low knowledge level.

Anxiety

As shown in Figure 2, almost 60% of the participants ranked their anxiety level as high at the entry level, while 20% reported a low anxiety level. Postassessment rankings are indicate a change in anxiety level - 84% reported low, and only 8% reported high levels.

Instructional and Management Value

Figure 3 illustrates the value of microcomputers as an instructional and as a management tool as perceived by the sample at entry level. The value of the computer as an instructional tool was rated as high by 84% of the particpants, while 98% rated the value as a management tool as high.

FIGURE 1 - KNOWLEDGE

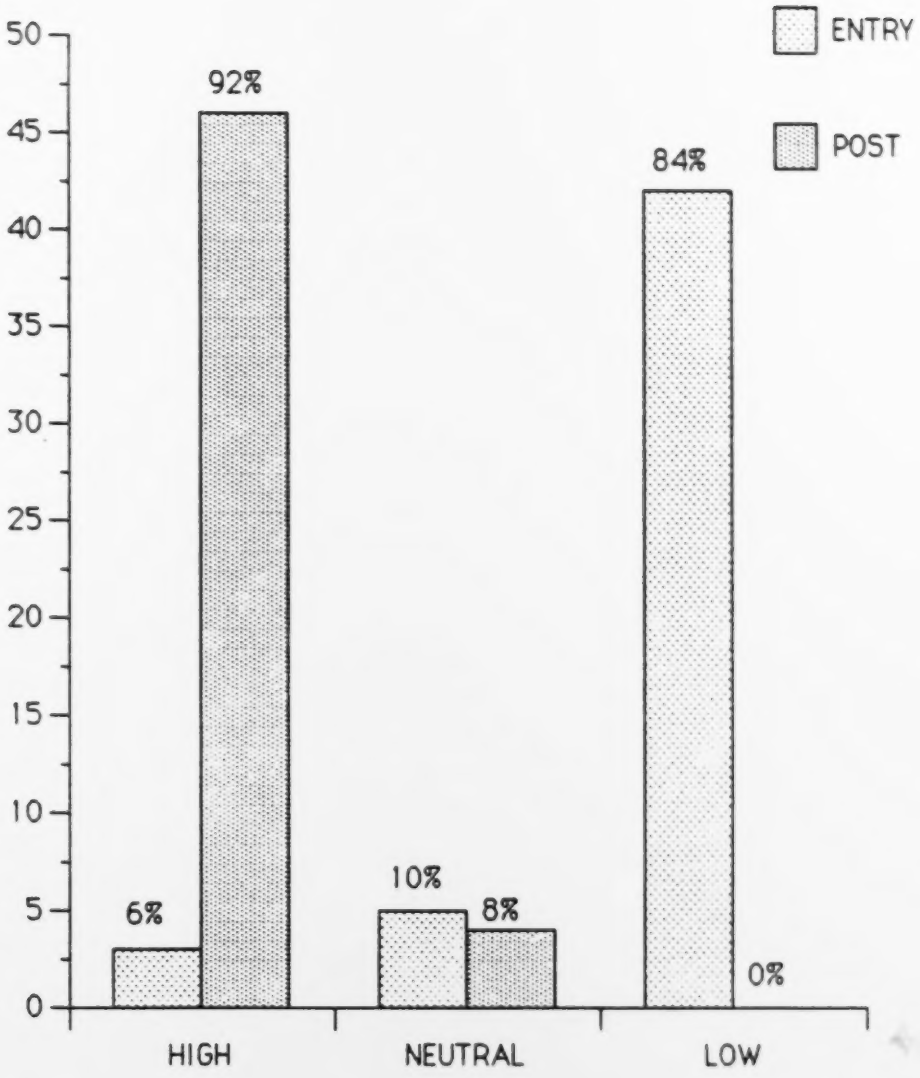


FIGURE 2 - ANXIETY

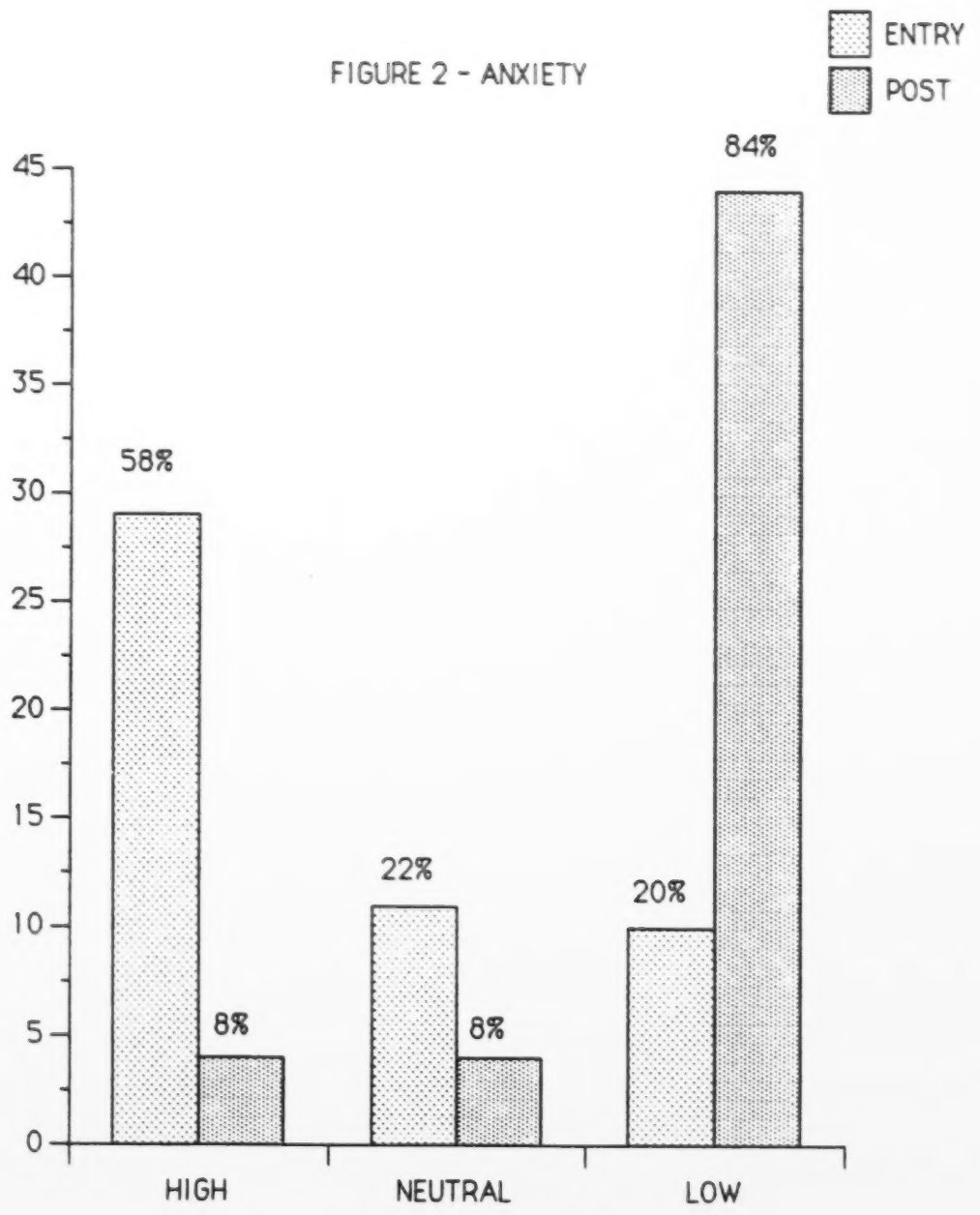
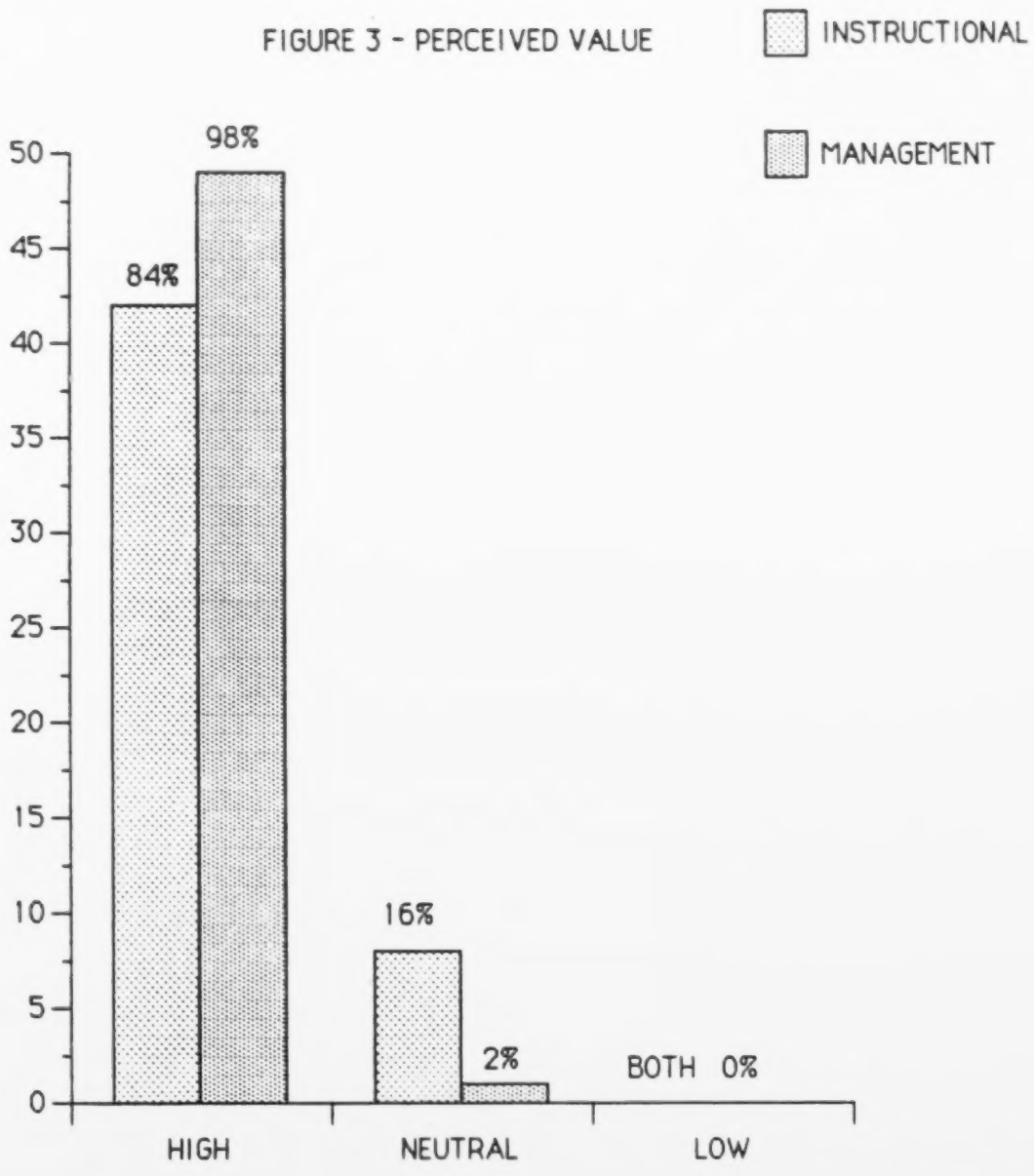


FIGURE 3 - PERCEIVED VALUE



Projected Utilization

At the time of exit from the experience, participants were asked to rank the utilizations from high (8) to low (1) that they projected they would use in their school settings. More than one topic could be ranked as high. The topics and their ranked positions are listed below:

1. Software Selection
2. Graphics
4. Word Processing
4. Spreadsheet
6. Logo
6. BASIC programming
8. Database management

Discussion

The low entry level assessments give credence to the concern of low utilization of microcomputers in the classroom. Over 80% indicated a knowledge level as low, and almost 60% reported an anxiety level as high. It seems reasonable to conclude that these professionals were not utilizing computers in the schools. However, more than 80% rated the value of the microcomputer as an instructional tool and as a management tool as high. Therefore, it may be concluded that teachers who elect to participate in microcomputer experiences have limited knowledge and high anxiety, but they highly value and desire to gain applicable knowledge and skills. As one teacher stated at entry level,

"My students use the computer one hour a week with a parent volunteer. They know much more than I do, and they are in kindergarten!"

Analysis of the post assessment data reveals significant gains in knowledge levels and significant decrease in anxiety levels. Based on these data, the participants in this sample are better prepared to utilize microcomputer technology.

Further research with this sample is recommended to validate this initial conclusion. Follow up case studies with a subsample could be used to assess actual utilization in classroom settings. This study could be used also as baseline data to track the trends of entry skills of inservice teachers.

References

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Rogers, J. V. (1978). Media center resources and Appalachian secondary teachers. Southeastern Librarian, 28 (3), 149-157.